

## The leaf-roller fauna of north-eastern Siberia, USSR, with descriptions of three new species (Lepidoptera, Tortricidae) (\*)

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### Summary

Sixty-eight species of Tortricidae are recorded from the Magadan oblast', USSR, the majority for the first time. Material was collected during the joint Soviet-Finnish expeditions 1987 and 1989 and scattered records were obtained from older collections by Russian entomologists and from a recent Finnish excursion. A few records are given for the Yukon, Canada. Three new species, *Olethreutes exaridanus* KUZNETSOV, *O. kononenkoi* KUZNETSOV and *Gypsonoma monotonica* KUZNETSOV are described. Four species are recorded for the first time from the Palaearctic Region and two species from the Nearctic Region. *Gypsonoma arctica* KUZNETSOV, 1979 is synonymized with *G. parryana* (CURTIS, 1835). Genitalia figures are given for the three new species, and for *Aphelia septentrionalis* OBRAZTSOV, 1959 and *Epinotia mediopladata* (WALSINGHAM, 1895). Imagines of six species are illustrated. A zoogeographic analysis is presented. The proportion of Holarctic species is 38.2%, much lower than in the well-studied Noctuidae.

### Résumé

Les auteurs ont enregistré 68 espèces de Tortricides dans la province (Oblat) de Magadan (URSS Extrême-Orientale) ; la majorité d'entre elles sont signalées de cette région pour la première fois. Ce matériel est le résultat des expéditions soviéto-finlandaises de 1987 et 1989, de recherches dans d'anciennes collections d'entomologistes russes, ainsi que d'une expédition finlandaise récente. Sont décrites trois espèces nouvelles : *Olethreutes exaridanus* KUZNETSOV, *O. kononenkoi* KUZNETSOV et *Gypsonoma monotonica*

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KUZNETSOV. Quatre espèces sont signalées pour la première fois de la région paléarctique et deux espèces de la région néarctique. *Gypsonoma arcticana* KUZNETSOV, 1979 est un synonyme de *G. parryana* (CURTIS, 1835). Les genitalia des trois nouvelles espèces sont figurés, ainsi que ceux d'*Aphelia septentrionalis* OBRAZTSOV, 1959 et d'*Epinotia medioplagata* (WALSINGHAM, 1895). Les imagos de six espèces sont également représentés. Le travail contient une analyse zoogéographique. La part des espèces holarctiques est de 38,2%, taux bien inférieur à celui des Noctuidae, famille bien étudiée.

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## Introduction

The so-called Beringia, with north-eastern Siberia of the present Palaearctic Region and Alaska and the Yukon of the Nearctic, has played an important role in the formation of the insect faunas of Eurasia and North America (KURENTOV 1963, LAFONTAINE & WOOD 1987, KONONENKO *et al.* 1989, MIKKOLA *et al.* 1991). Studies of the Beringian fauna therefore have great zoogeographic significance.

The tortricid fauna of the Magadan oblast' and the Chukchi republic (previously jointly called the Magadan(skaya) oblast') has been practically unknown. A few publications (FALKOVICH 1965, 1966) deal with descriptions of new species, and some materials collected by K. B. GORODKOV were used in the key published by KUZNETSOV (1978). A recent account from the Altai and Khamar-Daban mountains (KUZNETSOV & JALAVA 1988) clarified distributions of many northern species in the mountains of southern Siberia.

## Material and methods

The study mainly resulted from collections made by K. MIKKOLA on two joint Soviet-Finnish expeditions to the northern parts of the Soviet Far East, the first on 8.VII.-5.VIII.1987 to the Upper Kolyma area, the Aborigen Biological Station (Magadan oblast') and the second on 7.VII.-3.VIII.1989 to the Anadyr Valley and Plateau (Chukchi autonomous republic). The main collecting method was netting in the daytime, although at the Aborigen area two light traps operated by a Honda EX 500 generator were also used. In both years, some netting was also made around the town of Magadan, and in 1989 light-trapping at the Biological Station at Balagannoye, about 100 km W of Magadan and on the bird island of Talan, about 40 km SW of the latter locality. Two species were added to the list by a Finnish student excursion to the Aborigen Station in 1990 (KULLBERG *et al.* 1991).

In addition, all Tortricidae material collected from this area and preserved in the Zoological Institute in Leningrad were studied. These originate from the Chukchi Peninsula, collected in 1963 by K. B. GORODKOV and in 1982 by V. S. KONONENKO, and from the Upper Kolyma area, collected in 1980 by V. P. YERMOLAYEV, and from some other localities. The material of the joint expeditions is preserved in the Zoological Museum, University of Helsinki, but most holotypes of the taxa described as new species are deposited in the Zoological Institute, Leningrad; other type materials in Helsinki. Comments are also made on the Tortricidae material collected by K. MIKKOLA in the year 1985 in the Yukon, Canada (jointly with J. D. LAFONTAINE, mainly near Dawson City and in the Ogilvie Mts.) and preserved in the Zoological Museum in Helsinki. Literature references are given mainly for the non-European species (page number indicated).

### **Systematic list**

The systematics of the list is according to KUZNETSOV (1978), with some modifications and nomenclatural changes. The notes on general distribution are based on the literature and on collections of the Zoological Institute in Leningrad. The main collecting localities and periods are given below (see Fig. 1 with the same numbering; the collectors' names are given only on this list).

1. Magadan obl., Magadan 0-50 m, 60°N 151°10'E 7.VII. and 7.-8.VIII. 1987, 7.VII.1989 K. MIKKOLA leg.
2. Magadan obl., Okhotsk coast, Balagannoye and Talan island, 100-130 km W of Magadan, 4.-6.VIII.1989 K. MIKKOLA leg.
3. Magadan obl., Upper Kolyma river, Aborigin Biological Station, 62°N 149°40'E, 500 to 1600 m a.s.l., 8.VII.-5.VIII.1987 K. MIKKOLA leg.
4. Magadan obl., Upper Kolyma river, Kulu (ca. 100 km W of Aborigin), V. P. YERMOLAYEV leg.
5. Chukchi aut. rep., Upper Bolshaya river, 63°01'N 171°50'E, 14.-23.VII.1959, K. B. GORODKOV leg.
6. Chukchi aut. rep., Anadyr river, Markovo, 64°40'N 170°N50'E, ca. 50 m a.s.l. 18.-19.VII.1982 V. S. KONONENKO leg. and 7.-9.VII., 1.-2.VIII.1987 K. MIKKOLA leg.
7. Chukchi aut. rep., Anadyr plateau, 65°20'N 171°E, 600 m a.s.l., 10.-17.VII.1989, K. MIKKOLA leg.
8. Chukchi aut. rep., Upper Anadyr river, 65°30'N 168°50'E, 200 to 700 m a.s.l., 18.-23.VII.1989, K. MIKKOLA leg.



Fig. 1. The main study localities, see text for more details. 1. Magadan. 2. Balagannoye and Talan Island. 3. Aborigeny Biological Station. 4. Kulu Biological Station. 5. Upper Bolshaya River. 6. Markovo. 7. Anadyr Plateau. 8. Upper Anadyr River. 9. Middle Anadyr River. 10. Evgekinot-Iultin road and Amguema. 11. Provideniya.

**9.** Chukchi aut. rep., Middle Anadyr river,  $65^{\circ}10'N$   $171^{\circ}E$ , 20 m a.s.l., 26.-31.VII.1989, K. MIKKOLA leg.

**10.** Chukchi aut. rep., road Evgekinot-Iultin (and around Amguema),  $66^{\circ}15-45'N$   $178^{\circ}40'W$ , 20-600 m 24.VII.-8.VIII.1982 and 20.VII.-7.VIII.1986 V. S. KONONENKO leg.

**11.** Chukchi aut. rep., Provideniya,  $64^{\circ}30'N$   $173^{\circ}W$  10.-31.VII.1963 A. V. TSVETAYEV leg.

## TORTRICINAE

### Sparganothini

*Sparganothis rubicundana* (HERRICH-SCHÄFFER, 1856)

Aborigeny 500 m *Larix* bog to light 31.VII.1989 1♀; Upper Anadyr R. 600 m, mountain tundra 21.VII.1989 2♀♀; Middle Anadyr R., peat bog 26.-27.VII.1989 1♀.

Holarctic.

## Cochylini

*Trachysmia inopiana* (HAWORTH, 1811)

Kulu 16.VII.1980 1♂ ; Markovo 7.-12.VII.1989 1♀.  
Transpalaeartic.

*Aethes deutschiana* (ZETTERSTEDT, [1839])

Magadan sea shore 7.VII.1989 1♂ ; Aborigen 500 m, *Larix* bog to light, 7.VII.1987 1♂, 17.VII.1987 1♀ ; 17.VII.1987 1♀ ; Kulu 11.-15.VII.1980 2♂♂, 6♀♀.  
Holarctic.

*Eulia ministrana* (LINNAEUS, 1758)

Aborigen 700 m, scree slope 17.VII.1987 1♀ (several seen) ; Kulu 15.VII.1980 1♀ ; Markovo 20.VII.1982 1♀.  
Holarctic.

## Cnephasiini

*Eana osseana* (SCOPOLI, 1763)

Aborigen 800 m, scree slope 18.VII.1987 3♂♂ ; 1400 m, mountain tundra 21.-22.VII.1987 3♂♂, 1♀ ; 1600 m, mountain tundra 26.VII.1987 1♂ (one of the most abundant microlepidopteran species on tundra) ; 500 m, *Larix* bog to light 28.VII.-1.VIII.1987 3♂♂, 1♀ ; 9.8.1986 1♂, V. V. DUBATOLOV leg. ; Kulu 16.VII.1980 2♂♂ ; Upper Bolshaya R. 330 m, bushy tundra 23.VII.1959 ; Upper Anadyr R. 600 m, *Larix* forest 23.VII.1989 1♂ ; Iultin 21.VII.1963 1♂ (K. B. GORODKOV leg.) ; 84-85 km on Egvekinot- Iultin road, tundra 27., 29.VII. and 3.VIII.1982 14♂♂, 5♀♀ ; Provideniya, Chaplino 10.-31.VII.1963 1 ex. (TSVETAYEV leg.) ; Ust- Chaun, 100 km S Pevek, 69°N 170°E 2.VIII.1986 1 ex (DUBATOLOV leg.).  
Holarctic.

*E. argentana* (CLERCK, 1759)

Magadan, sea shore 7.VII.1989 2♂♂.  
Holarctic.

## Archipini

*Choristoneura lapponana* (TENGGSTRÖM, 1869)

Markovo 7.-12.VII.1989 1♂ ; Aborigen 600 m, *Larix* bog to light and 1200 m mountain tundra, 1987, 2♂♂, 4♀♀ ; 700 m, scree slope 11.VII.1987 1♀ ; Kulu 15.VII.1980 1♀.

Holarctic. This species is distributed from Fennoscandia to the Chukchi Peninsula. In addition, two specimens were discovered among the material collected by K. MIKKOLA in the year 1985 from the Yukon, Canada.

*Aphelia septentrionalis* OBRAZTSOV, 1959 : 8 (Fig. 2)

Magadan, sea shore 7.-8.VIII.1987 1♂ and 7.VII.1989 3♂♂; Aborigin 500-600 m, *Larix* bog to light 8.-15.VII.1987 6♂♂, 3♀♀; 600 m scree slope to light 16.VII.1987 1♂; 1250 m mountain tundra 23.VII.1987; 440 m aspen slope to light 30.VII.1987 1♂; Kulu 16.VII.1980 1♂; Markovo valley forest 19.VII.1982 4♂♂, 7.-12.VII.1989 1♂; Upper Anadyr R. 700 m, mountain tundra 21.VII.1989 1♂.

Holarctic, previously known only from Alaska, USA, and Japan.

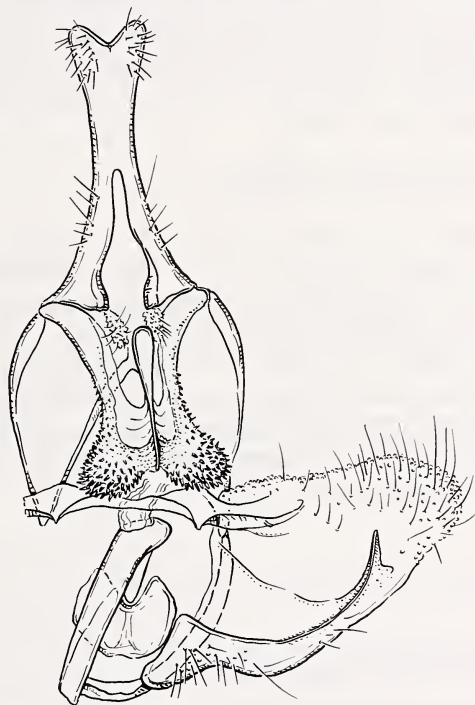


Fig. 2. *Aphelia septentrionalis* OBRAZTSOV, ♂ genitalia. Magadan obl., Upper Kolyma R., 500 m 8.VII.1987 K. MIKKOLA leg.

*Clepsia rurinana* (LINNAEUS, 1758)

Magadan, sea shore 7.-8.-VIII.1987 1♂.

Transpalearctic.

*C. danilevskyi* KOSTJUK, 1973 : 162

Aborigen 1000-1400 m, mountain tundra 10.-23.VII.1987 4♂♂, 11♀♀. The moth was the most abundant lepidopteran species on the tundra. 64-87 km on Egvekinot-Iultin road 19.VII.-4.VIII.1982 and 1986 19♂♂, 4♀♀; neighbourhood of Amguema, mountain tundra 7.VIII.1986 1♂. Holarctic. The species has also been observed in the Altai Mts., in Yacutia, in Alaska, USA, and in the Yukon, Canada.

*C. aerosana* (LEDERER, 1853 : 383)

Upper Bolshaya R. 330 m 14.-22.VII.1959 4♂♂, 3♀♀; Anadyr plateau 600 m 16.-17.VII.1989 4♂♂, 1♀; Upper Anadyr R. 700 m, mountain tundra 21.VII.1989 2♀♀ and 400 m, Larix forest 23.VII.1989 1♂; middle Anadyr R. 20 m, peat bog 26.-27.VII. 1♀.

Eastern palaeartic; found on the mountains of Siberia from Ural to Anadyr plateau as well as in China, Mongolia and the Primorye Territory, Ussuri area, USSR.

*C. moeschleriana* (WOCKE, 1862)

Aborigen 500 m, Larix bog 16.-29.VII.1987 14♂♂, 2♀♀ and 500 m, Sibit-Tyellakh road 18.VII.1987 1♂; Upper Bolshaya R. 23.VII.1959 1♂; Upper Anadyr R. 700 m, mountain tundra 21.VII. 21.VII.1989 1♂, 200 m, river meadow/bog 23.VII.1989 6♂♂, 2♀♀ and 400 m, Larix forest 23.VII.1989 1♀; 87 km on Evgekinot-Iultin road, 28.VII.1986 4♂♂; neighbourhood of Amguema, mountain tundra 7.VIII.1982; Cap Chechen 26.VII.1938 2♂♂ (ROSANOV leg.); Provideniya, Chaplino 10.31.VII.1963 1♀ (TSVETAYEV leg.); Pevek 69°25'N 170°15'E 11.VII.1963 1♂ (GORODKOV leg.).  
Holarctic.

## Tortricini

*Acleris hastiana* (LINNAEUS, 1758)

Kulu, ex larva (*Salix*) 4.VIII.1980.  
Holarctic.

*A. implexana* (WALKER, 1863)

Markovo 10.VII.1967 2♂♂ (MIRSAYEVA leg.).  
Holarctic, in addition found in Fennoscandia, mountains of Siberia, N America and Greenland.

## OLETHREUTINAE

### Bactrini

*Bactra lancealana* (HÜBNER, [1799])

Markovo 7.-12.VII.1989 1♂.

Holarctic.

### Olethreutini

*Apotomis lemniscatana* (KENNEL, 1900)

Aborigen 1600 m, mountain tundra 21.VII.1987 1♂ ; Anadyr plateau 600 m, 12.-16.VII.1989 2♂♂, 1♀ ; Upper Anadyr R. 700 m, mountain tundra 21.VII.1989 2♀♀ and 400 m, *Larix* forest 23.VII.1989 1♀ ; Middle Anadyr R. 20 m, peat bog 26.-27.VII.1989 1♀.

Palaeartic, arctoalpine ; this species was previously known only from the mountains of Fennoscandia and from the Altai mountains (KUZNETSOV & JALAVA 1988).

*A. frigidana* (PACKARD, 1867 : 57)

Chaun bay, Cap Turarov 69°N 170°E 21.VI.1940 1♀ (SEMENOV leg.).

Holarctic.

*A. infida* (HEINRICH, 1926)

Upper Anadyr R. 400 m, *Larix* forest 23.VII.1989 1♀.

Holarctic.

*A. sauciana* (FRÖLICH, 1828)

Aborigen 1250-1600 m, mountain tundra 8.-27.VII.1987 2♂♂, 3♀♀ ; 84 km on Egvekinot-Iultin road 30.VII.1982 1♂.

Transpalaeartic.

*A. demissana* (KENNEL, 1900 : 248)

Aborigen 500 m *Larix* bog 7.VII.1990 1♂ (KULLBERG, KUUSSAARI & NIEMINEN leg.) (KULLBERG *et al.* 1991).

Widespread in the northern Palaeartic. Extends southwards to the Altai Mountains (KUZNETSOV & JALAVA 1988).

*A. capreana* (HÜBNER, [1817])

Markovo 7.-12.VII.1989 1♂3♀♀ ; Upper Anadyr R. 500 m, *Sphagnum* river valley 22.VII.1989 1♂.

Holarctic.

*Orthotaenia undulana* (DENIS & SCHIFFERMÜLLER, [1775])

Magadan, sea shore 7.-8.VIII.1987 1♀ ; Okhotsk coast, Talan island



5.-6.VIII.1989 1♂ ; Markovo, valley forest 18.-20.VII.1982 12♂♂, 7♀♀ ; Upper Anadyr R. 200 m, river meadow/bog 23.VII.1989 1 ex. ; Middle Anadyr R. 20 m, meadow 24.VII. 3♂♂ and 29.-31.VII.1989 5♂♂.  
Holarctic.

*Olethreutes kamtshadalus* (FALKOVICH, 1966 : 222)

Pevek 69°25'N 170°15'N 29.VI.1963 (GORODKOV leg.).

The species was previously known only from Apoka, Koryatsky aut. rep. (FALKOVICH, 1966).

*O. magadanus* (FALKOVICH, 1965 : 422)

160 SW of Magadan 18.VII.1964 1♂ (TSVETAYEV leg.) ; Aborigen 700 m, scree slope 12♂♂ ; Kulu 14.VII.1980 ; Anadyr plateau 600 m 12.-13.VII. 2♂♂, 16.-17.VII.1989 1♂ ; Upper Anadyr R. 700 m, mountain tundra 20.-21.VII.1989 2♂♂, 6♀♀ ; 87 km on Egvekinot-Iultin road, mountain tundra 27.VII.1982.

The species is known only from the Magadan oblast'.

*O. ledianus* (LINNAEUS, 1758)

Aborigen 500-600 m, *Larix* bog 8. and 15.VII.1987 2♂♂, 1250 m, mountain tundra 8.VII.1987 2♂♂, 1♀ and 1400 m, mountain tundra 10. and 23.VII. 2♀♀ ; Kulu 11.-16.VII.1980 2♂♂, 5♀♀.

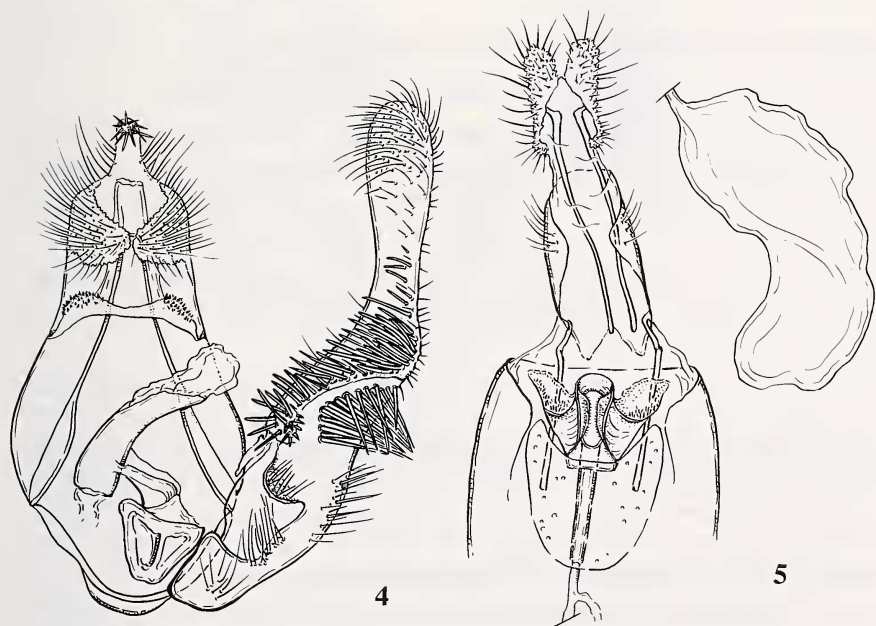
Transpalaeartic.

***Olethreutes exaridanus* KUZNETSOV sp. n. (Figs. 3-5)**

ETYMOLOGY : From the habitat of the type material.

DIAGNOSIS : The forewing pattern is quite similar to *O. kamtshadalus* (FLKV.), but it can be distinguished by the genitalia. The male genitalia are closer *O. ledianus* (L.) but they differ from that species by the spined and undivided tip of the uncus, and by the position of the spine cluster on the sacculus of the valva. The female is distinguished from *O. ledianus* by the shape of the sterigma.

DESCRIPTION : Wing expanse 16-18 mm. Head and palpi grey, thorax blackish grey. Tegulae grey with whitish apical part. Forewing fairly broad, apically rounded. Ground colour dark fuscous, formed by mixture of grey and black scales. Angle of outer boundary of basal fascia obtuse. Light pattern consisting of median transverse band, whitish costal striae and white tornal band of which light grey transverse band extends from pair of double striae at middle of costal margin to posterior margin of wing. Apical half with 4-5 double striae. Tornal whitish band runs obliquely to tornal region of outer margin of wing. Fringe with several white dots in subapical area.



Figs. 3-5. *Olethreutes exaridanus* KUZNETSOV sp.n. Chukchi aut. rep., Upper Anadyr R., 700 m 20.-21.VII.1989, K. MIKKOLA leg. 3. ♀ paratype. 4. ♂ genitalia (holotype). 5. ♀ genitalia (paratype).

MALE GENITALIA : Uncus terminally spined, apically undivided. Valva with two clusters of long, strong spines, one on basal part of valva proper and other on outer part of sacculus. Latter located more distally than in *O. ledianus*. Apical half of cucullus with thin chaetae. Aedeagus without cornuti. Socius broad with rounded top. Gnathos laterally dentate.

FEMALE GENITALIA : Sternite of 7th segment anteriorly rounded. Voluminous sterigma with deeply located oval ostium bursae which is half-concealed by lateral walls of sterigma. Lateral edges of sterigma triangular. Ductus bursae deeply sclerotized. Bursa copulatrix without signa. Anal papillae apically rather wide. Posterior apophyses longer than anterior.

TYPE MATERIAL : Holotype ♂ labelled „Chukchi aut. okrug., Upper Anadyr R. 700 m, 20.VII.1989, K. MIKKOLA leg.“. Paratypes : 1♂, 7♀♀ with the same data as holotype, 20.-21.VII.1989 ; 1♀, 83 km on Egvekinot-Iultin road, tundra, 4.VIII.1982, V. S. KONONENKO leg. Holotype and the latter paratype deposited in the Zoological Institute, AN SSSR (Leningrad), others in the Zoological Museum, University of Helsinki.

***Olethreutes kononenkoi* KUZNETSOV sp.n. (Figs. 6,7)**

ETYMOLOGY : Named after the collector of the type material.

DIAGNOSIS : The new species resembles *O. concretanus* (Wck.) in colouration and markings of forewing. The structure of male genitalia clearly differs from all known Palaearctic species of *Olethreutes* and is closest to *O. concretanus* and *O. roseomaculanus* (H.-S.).

DESCRIPTION : Wing expanse 13 mm. Like *O. concretanus*, but palpi more blackish, black marginal line lacking, and median transverse band and costal striae not distinct.

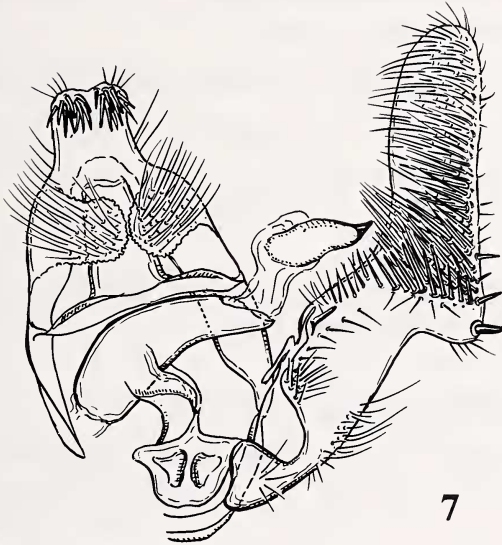
MALE GENITALIA : Uncus and socii as in *O. concretanus*. Uncus spined terminally, its tip only weakly divided. Cucullus of valva long, with long chaetae strongest near base situated in transverse row, and with single anal spine. Cluster of spines lacking on sacculus but group of setae present near basal fovea. Vesica with sclerotized plate and apical cornutus as in *O. roseomaculanus*. Socii broad with rounded tips, covered only by thin bristles. Transverse gnathos simple.

FEMALE GENITALIA : Unknown.

TYPE MATERIAL : Holotype ♂ labelled (in Russian) : “Chukotka, 87 km on Egvekinot-Iultin road, tundra, 29.VII.1982, V. KONONENKO



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Fig. 6-7. *Olethreutes kononenkoi* KUZNETSOV sp.n. Chukchi aut. rep., 87 km on Egvekinot-Iultin road 29.VII.1982, V. S. KONONENKO leg. 6. ♂ holotype. 7. ♂ genitalia (holotype).

leg.". Paratype: 1♂ with the same data. Holotype in Zoological Institute, Leningrad, paratype in Zoological Museum, Helsinki.

*O. concretanus* (WOCKE, 1862)

Aborigen 1200-1600 m, mountain tundra 8.VII. and 26.VII.1987 2♀♀

and 500 m, *Larix* bog 15.-18.VII.1987 1♀; Kulu 11.-20.VII. 5♂♂, 1♀; Upper Bolshaya R. 15.VII.1959 1♀.

Transpalaeartic.

*O. glacianus* (MÖSCHLER, 1860 : 380)

Aborigen 700 m, scree slope 11.-15.VII. 1987 2♂♂, 2♀♀, 500-600 m, *Larix* bog 8.-15.VII.1987 9♂♂, 1♀, 1250 m, mountain tundra 13. and 24.VII.1987 2♂♂, 440 m, aspen slope 30.VII.1987 1♂ and 1500 m, mountain tundra 24.VII.1987 1♂; Kulu 11.-20.VII.1980 7♂♂, 3♀♀; Upper Bolshaya R. 330 m, bushy tundra 15.VII.1959 1♂ and valley 25.VII.1959 1♂; Markovo, valley forest 9.-20.VII.1982 2♂♂, 1♀ and 7.-8.VII.1989 1♀; Upper Anadyr R. 700 m, mountain tundra 21.VII.1989 1♀; 600 m, *Sphagnum* river valley 22.VII.1989 1♀; Middle Anadyr R. 20 m, peat bog 26.-26.VII.1989 1♀.

Holarctic. New for the fauna of the Palaearctic and for the USSR, previously known only from N America.

*O. hyperboreanus* (KARVONEN, 1932)

Aborigen 600 m, scree slope to light 14.VII.1987 1♂; Kulu 13. and 17.VII.1980 2♂♂.

Palaearctic. The species is widely distributed in the northern parts of Eurasia from Fennoscandia eastwards to the Yenisey river and is now recorded for the first time from north-eastern Siberia.

*O. palustranus* (ZELLER, 1846)

Kulu 20.VII.1980 2♂♂; Krasnoarmeisky, Chaunskiy raion 69°25'N 172°E 9.VII.1963 1♂ (GORODKOV leg.).

Transpalaeartic.

*O. schaefferanus* (HERRICH-SCHÄFFER, 1851)

Aborigen 1400-1600 m, mountain tundra 17.-23.VII.1987 8♂♂; Kulu 14.- 20.VII.1980 4♂♂, 1♀; 64-89 km on Egvekinot-Iultin road 29.VII.-3.VIII.1982 5♂♂, 1♀, 20.VII.1986 1♂; Provideniya, Chaplino VII.1957 1♂ (Gavriljuk leg.).

Palaearctic. The species is known from the Alps and from Fennoscandia, eastward to the Ural Mts., and locally from eastern Asia (Magadan obl., Kuril Islands).

*O. turfosanus* (HERRICH-SCHÄFFER, 1851)

Aborigen 600 m, *Larix* bog 8.VII.1987 1♂ and 1000-1600 m, mountain tundra 9.VII.-2.VIII.1987 18♂♂, 8♀♀; Kulu 11.-17.VII.1980 18♂♂, 15♀♀; Anadyr plateau 600 m, 16.-17.VII.1989 2♂♂, 1♀; Upper Anadyr R. 700 m, mountain tundra 20.VII. 1♂1♀; 64-87 km on Egvekinot-

Iultin road 29.VII.-7.VIII.1982 5♀♀; Provideniya, Chaplino 10.-31.VII.1963 1♂ (TSVETAYEV leg.); Pevek 69°25'N 170°15'E 12.VII.1963 1♂ (GORODKOV leg.).  
Transpalaeartic.

*O. dissolutanus* (STANGE, 1886)

Aborigen 600 m, scree slope to light 14.-15.VII.1987 11♂♂, 500 m *Larix* bog to light 8. and 28.VII.1987 2♂♂ and 440 m, aspen slope to light 30.VII.1987 1♂.

Palaeartic. The species is distributed locally in Europe and from Central Asia (Kusnetskiy Alatau) through the S Siberian mountains (Altai) to the Magadan oblast'.

*O. obsoletanus* (ZETTERSTEDT, [1839])

Aborigen 1500-1600 m, mountain tundra 21.-26.VII.1987 12♂♂, 3♀; Upper Bolshaya R., shrub tundra 15.VII.1959 2♂♂; Upper Anadyr R. 700 m, mountain tundra 21.VII.1989 1♂, 600 m, *Sphagnum* river valley 22.VII.1989 1♂ and 200m, river meadow/bog 23.VII.1989 1♂; Pevek 11.- 12.VII.1963 2♂♂ (GORODKOV leg.).  
Transpalaeartic.

*O. metallicanus* (HÜBNER, [1799])

Magadan 50 m, *Veratrum* bog 7.VII.1989 6♂♂, 1♀; Aborigen, Sibit-Tyellakh road 500 m, 19.VII.1987 1♂; Kulu 14.-20.VII.1980 6♂♂, 8♀♀; Upper Bolshaya R. 330 m, bush tundra 14.-23.VII.1959 13♂♂, 1♀; Markovo 7.- 12.VII.1989 1♂; Middle Anadyr R. 20 m, meadow 29.VII.1989 1♂; 87 km on Egvekinot-Iultin road, bush and *Larix* forest 18.-12.VII.1982 10♂♂, 4♀♀; Pevek, Valkumenyi 69°25'N 170°15'E, 11.-12.VII.1963 1♂ (GORODKOV leg.).  
Transpalaeartic.

*O. inquietanus* (WALKER, 1863 : 378)

Aborigen 1250 m, mountain tundra 9.VII.1987 1♂; 87 km on Egvekinot- Iultin road, mountain tundra 24.VII.1982 1♂; around Amguema, mountain tundra 7.VIII.1982; Chaun bay, delta of Ichun R., ca. 69°N 170°E, 14.-21.VI.1940 4♂♂, 1♀ (SEMENOV leg.); Pevek 69°25'N 170°15'E, 29.VI.1963 1♂ (GORODKOV leg.); Schmidt 20.VII.1963 1♂ (GORODKOV leg.).

Widespread in the northern Holarctic, southwards known from the mountains of Altai, Sayan and Mongolia.

*O. lacunanus* (DENIS & SCHIFFERMÜLLER, [1775])

Balagannoye, 100 km W of Magadan 4.-6.VIII.1989 1♂ ; Kulu 14.-16.VII.1980 6♂♂, 2♀♀.

Transpalaeartic.

*O. rivulanus* (SCOPOLI, 1763)

Kulu 16.VII.1980 1♂.

Transpalaeartic.

*Rudisociaria expeditana* (SNELLEN, 1883 : 198)

Magadan, sea shore 7.VII.1989 3♂♂ ; Aborigen 600-700 m, scree slopes 11.-18.VII.1987 3♂♂, 2♀♀, 500 m, *Larix* bog 31.VII.1987 1♂, 1250 m, mountain tundra to light 23.-24.VII.1987 2♂♂ and 400 m, steppe slopes near Vetrenyi, left shore of Kolyma 20.VII.-3.VIII. 14♂♂ ; Kulu 16.VII.1980 1♂. Eastern palaeartic. The species occurs locally at the south-eastern margin of Europe, in Bashkiria and the Ural area. It is widely known from the Asiatic part of the USSR to Kamchatka and Amur-Ussuri area, also from Mongolia.

### **Enarmoniini**

*Ancylis geminana* (DONOVAN, 1806)

Markovo 7.-12.VII.1989 1♂.

Transpalaeartic.

*A. unguicella* (LINNAEUS, 1758)

Aborigen 1250 m, mountain tundra 13.VII.1987 1♂.

Holarctic.

*A. myrtilana* (TREITSCHKE, 1830)

Kulu 15.VII.1980 1♂.

Transpalaeartic.

### **Eucosmini**

*Spilonota laricana* (HEINEMANN, 1863)

Balagannoye, 100 km W Magadan 4.-6.VIII.1989 1♀.

Holarctic.

*Epinotia cruciana* (LINNAEUS, 1761)

Aborigen 500 m, *Larix* bog to light and with net from *Salix* 1.VIII.1987 11♂♂, 8♀♀ ; Sokol 56 km N Magadan, *Salix* forest 24.VI.1966 7♂♂, 3♀♀ (GORODKOV leg.) ; Upper Bolshaya R., bush tundra 23.-25.VII.1959

3♂♂ ; Upper Anadyr R. 700 m, mountain tundra 21.VII.1989 3♂♂, 1♀ and 200 m, river meadow/bog 23.VII.1989 3♂♂, 3♀♀.  
Transpalaeartic.

*E. stroemiana* (FABRICIUS, 1781)

Kulu, ex larva (*Betula middendorfi*) 30.VII.1980 1♂, ex larva (*Alnus kamtschatica*) 31.VII.1980 1♀ ; middle Anadyr 20 m, meadow 30.VII.1989 1♂.  
Holarctic.

*E. tetraquetra* (HAWORTH, 1811)

Mys Ostrovnoy, a bird island 20 km W Magadan 3.VII.1990 1♂ (KULLBERG, KUUSSAARI & NIEMINEN leg.) (KULLBERG *et al.* 1991).  
Transpalaeartic.

*E. solandriana* (LINNAEUS, 1758)

Kulu, ex pupa (*Betula middendorfi*) 31.VII.1980 1♂.  
Holarctic.

*Epinotia medioplagata* (WALSINGHAM, 1895) (Figs. 8,9)

Magadan, sea shore, 7.-8.8.1987, 1♀.

New for the Palaeartic Region, accordingly a Holarctic species. The female was compared to 2♂♂, 2♀♀ from Canada. The Palaeartic specimen is smaller (wing expanse 13 mm) and with the blackish spot of slightly different shape than in the Canadian specimens. As the genitalia seem to be identical, the specimen is interpreted to be conspecific with *E. medioplagata*. More material may show that the Palaeartic population represents a distinct subspecies.

*Zeiraphera griseana* (HÜBNER, [1799])

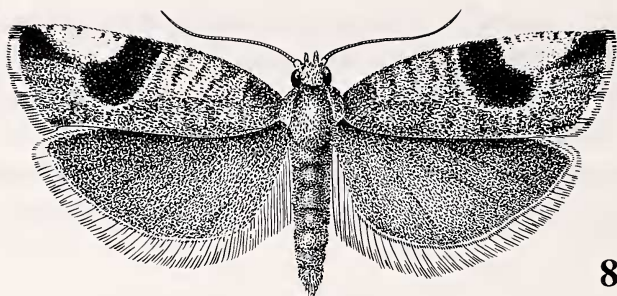
Balagannoye, 100 km W Magadan, sea shore 4.-6.VIII.1989 4♂♂ ; Aborigen 1400 m, mountain tundra 10.VII.1987 1♂ ; Kulu, ex larva (*Pinus pumila*) 27.VII.1980 1♂1♀, ex pupa (*Larix gmelinii*) 29.VII.1980 1♀.  
Transpalaeartic.

*Gypsonoma nitidulana* (ZELLER 1846)

Aborigen 600 m, *Larix* bog 8.VII.1987 1♀, 500 m, *Larix* bog 31.VII.1987 1♂, and 1200-1400 m, mountain tundra 13. and 21.-23.VII.1987 3♂♂ ; Kulu 12.-20.VII.1980 5♂♂, 1♀ ; Markovo, valley forest 19.VII.1982 2♂♂.

Holarctic. The species was previously known only from the Palaeartic, but it is present in the material collected by K. MIKKOLA in the Yukon in 1985.





Figs. 8-9. *Epinotia medioplagata* (WALSINGHAM) (?ssp.), Magadan obl., Magadan 7.-8.VIII.1987, K. MIKKOL. leg. 8. ♀. 9. ♀ genitalia.

*G. parryana* (CURTIS, 1835)

(= *arctica* KUZNETSOV, 1979 : 81 **syn. n.**) (Fig. 10)

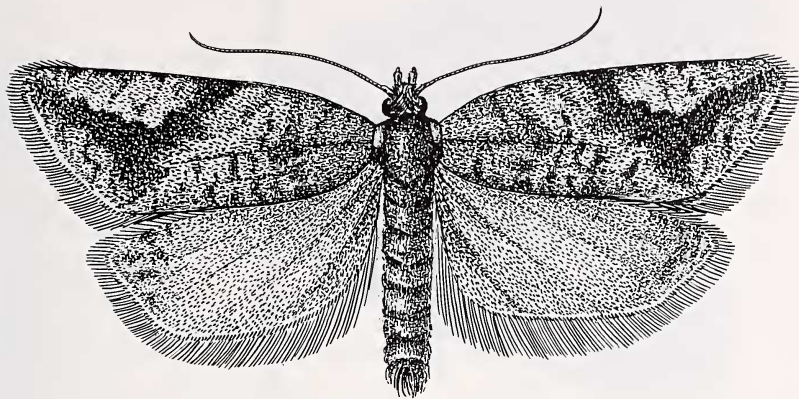


Fig. 10. *Gypsonoma parryana* (CURTIS). ♂ holotype of *G. arctica* KUZNETSOV **syn.n.**, Wrangel Island, Somnitelnaya Bay 22.VII.1966 (K. GORODKOV leg.).

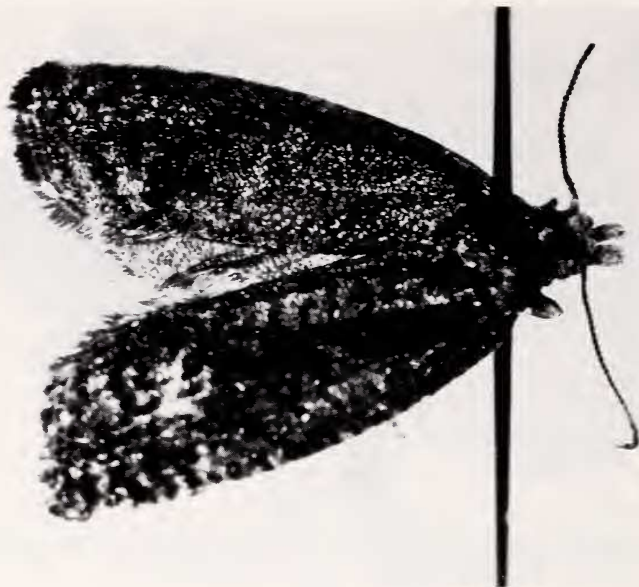
Aborigen 500 m, *Larix* bog to light 29.VII.1987 1♂; 1200-1800 m, mountain tundra 6.VII.1990 1♂ (KULLBERG, KUUSSAARI & NIEMINEN leg. (KULLBERG *et al.* 1991); Vayegi, 80 km S Markovo, 9.VII.1989 1♂ (K. MIKKOLA leg.); Anadyr plateau 600 m, mountain tundra 16.-17.VII.1989 1♂; Upper Anadyr R. 700 m, mountain tundra 20.-22.VII.1989 1♂1♀.

Holarctic. *G. arctica* was known only from Taimyr Peninsula, Wrangel Island and Chukchi Peninsula (KUZNETSOV, 1982). *G. parryana* (CURTIS, 1835) was previously known to occur in Canada and USA.

***Gypsonoma monotonica* KUZNETSOV **sp.n.** (Figs. 11-13)**

ETYMOLOGY : From the monotonous appearance of the new species.  
DIAGNOSIS : The species is similar to *G. erubescens* KAWABE, 1978, but is distinguished from it by the absence of the ocelloid patch. The male genitalia show a unique feature among the Palaearctic species, the broad socii with small dorsal appendages. The females may be distinguished from *G. erubescens* on the basis of the shape of the sterigma and ductus bursae.

DESCRIPTION : Wing expanse 16-17 mm. Head, palpi and thorax fuscous or blackish. Forewing for basal 2/3 dark fuscous, terminal third brown or reddish, with numerous scattered and irregular leaden grey transverse streaks. Median transverse line and costal striae quite



11



12

13

Figs. 11-13. *Gypsonoma monotonica* KUZNETSOV sp.n., Magadan obl., Upper Kolyma R., 1600 m 21.-26.VII.1987. K. MIKKOLA leg. 11. ♂ holotype. 12. ♂ genitalia (paratype). 13. ♀ genitalia (paratype).

indistinct or invisible. Dorsal spot and ocelloid patch lacking. Hindwing fuscous.

MALE GENITALIA (Fig. 12) : Uncus lacking. Valva with cucullus as large as basal part of valva. Ventral margin of valva medially with gentle notch. Harpe visible as weak arched ridge. Setae lacking at margin of wide basal fovea. Lower part of cucullus with thickened, sclerotized setae, outer margin devoid of setae. Aedeagus with tuft of deciduous cornuti. Broad, thinly haired socii bear small appendages dorsally.

FEMALE GENITALIA (Fig.13) : Sternite of 7th segment transversally expanded, its width being considerably larger than length. Ostium bursae deeply concealed beneath sterigma which shows laterally wide, semicircular edges. Left wall of ductus bursae strongly sclerotized. Two signa horn-shaped with broad base. Anal papillae rather wide. Pairs of apophyses of approximately similar length.

TYPE MATERIAL : Holotype ♂ labelled "USSR", Magadan obl., Upper Kolyma R., 1600 m, mountain tundra, 26.VII.1987, K. MIKKOLA leg. Paratypes 2♂♂, 2♀♀ with same data, 21.-26.VII.1987. Holotype deposited in the Zoological Institute, Leningrad, paratypes in the Zoological Museum, Helsinki.

DISTRIBUTION : Known only from the type locality, a mountain top above the Aborigen Biological Station.

*Notocelia tetragonana* (STEPHENS, 1834)

Markovo 7.-12.VII.1989 1♂.

Palaearctic. This species was previously known only from Europe.

*N. cynosbatella* (LINNAEUS, 1758)

Aborigen 600-700 m, scree slope 11.-15.VII.1987 2♂♂, 1♀.

Transpalaearctic.

*N. incarnatana* (HÜBNER, [1800])

Aborigen 500 m, *Larix* bog to light 29.VII.1987 1♂.

Transpalaearctic.

*Epiblema simplonianum* (DUPONCHEL, 1835)

87 km on Egvekinot-Iultin road, mountain tundra 27.VII.-3.VIII.1982, 19.VII.1986 8♂♂, 5♀♀ ; Amguema 26.VII.1986 1♀.

Transpalaearctic, arctoalpine.

Remark : Note that the generic name is a neuter noun.

*Eucosma ommatoptera* FALKOVICH, 1965 : 434 ssp. *kurilensis*  
KUZNETSOV, 1968 : 579

Aborigen 1000-1250 m, mountain tundra 10.-13.VII.1987 2♂♂ and 500 m, *Larix* bog, on baits 1♀; Upper Anadyr R. 700 m, mountain tundra 21.VII.1989 1♂2♀♀; 62-64 km on Egvekinot-Iultin road, 3.-5.VIII.1982 1♂1♀; Provideniya, Chaplino 10.-31.VII.1963 2♂♂ (TSVETAYEV Leg.). Eastern palaeartic. The subspecies *kurilensis* was previously known only from the Kuril Islands. The nominate subspecies occurs in the Ussuri area. The moths from the Chukchi Peninsula and Anadyr River are similar to the type specimens of the subspecies *kurilensis* but differ from the nominate subspecies in the forewing pattern and male genitalia.

*E. gorodkovi* KUZNETSOV, 1979

Aborigen 1250-1400 m, mountain tundra 8.-26.VII.1987 5♂♂,4♀♀; Anadyr plateau 600 m, mountain tundra 12.-13.VII.1987 1♂,1♀. This species was previously known only from the Chukchi Peninsula.

*E. messingiana* (FISCHER VON RÖSLERSTAMM, 1837)

Upper Anadyr R. 700 m, 22.VII.1989 1♂; 64 km on Egvekinot-Iultin road, mountain tundra 3.VIII.1982 1♂. Transpalaeartic.

*Asketria kenteana* (STAUDINGER, 1892 : 390) (Fig. 14)

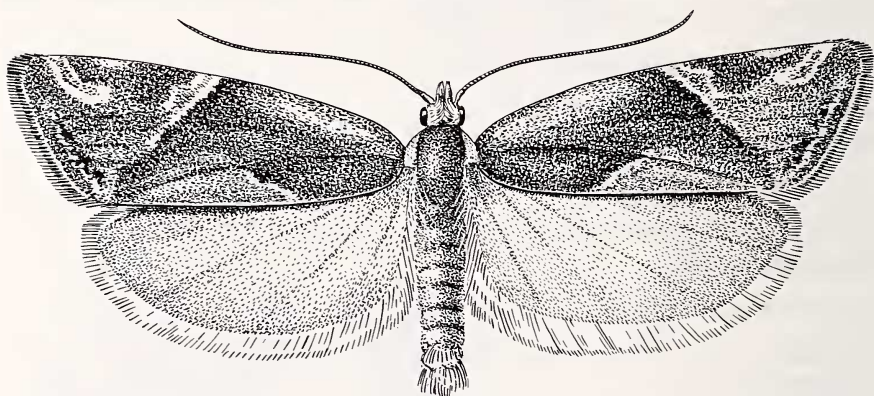


Fig. 14. *Asketria kenteana* (STAUDINGER), ♂, Magadan obl., Upper Kolyma R., 700 m 15.VII.1987 K. MIKKOLA leg.

Aborigen 700 m, scree slope 15.VII.1987 4♂♂,2♀♀. The species was flying exclusively on an area of some 20 m x 20 m, but the foodplant question could not be solved.

The species has been previously found only in Transbaikalia, the Amur area and Mongolia.

## Grapholitini

*Dichrorampha sedatana* (BUSCK, 1906)

Markovo, deciduous valley forest 19.-20.VII.1982 3♂♂.  
Holarctic.

*D. plumbana* (SCOPOLI, 1763)

Steppe slopes near Vetrenyi, left shore of Kolyma, 20.VII.1987 3♀♀.  
Transpalaeartic. Occurs in Europe and in Siberia eastward to Minussinsk, in the eastern parts of the USSR found only in the Magadan oblast' and in Kamchatka.

*D. ambrosiana* (KENNEL, 1919 : 90)

Magadan, sea shore 7.-8.VIII.1987 11♂♂ and 7.VII.1989 5♂♂.  
The species occurs locally in Siberia from Kusnetzkiy Alatau in the west to Kamchatka in the east.

*Grapholita aureolana* (TENGSTROM, [1848])

Aborigen 1400 m, mountain tundra 10.VII.1987 1♀.  
Distributed in the mountain systems of Europe, including N Fennoscandia, and Siberia.

*Cydia oxytropidis* (MARTINI, 1912)

Steppe slopes near Vetrenyi, left shore of Kolyma, 20.VII.1987 3♂♂, 2♀♀.  
Transpalaeartic. Known in N Asia only from the Magadan oblast'.

## Zoogeography of the NE Siberian Tortricidae

Of the 68 species of Tortricidae recorded from the Magadan oblast' and Chukchi autonomous republic, 49 species (72.1%) are transpalaeartic or Holarctic. The majority of them are subarctic in character (cf. MIKKOLA 1988). Thus, 33/68 (48.5%) of the tortricid species of the Magadan-Chukotka area occur also in Lapland and in the Kola Peninsula (cf. VALLE 1933, KYRKI 1978). These species live in both areas mainly in the tundra or at the boundary area between tundra and forest, and they are usually abundant where they occur. This is seen in the fact that as many as 21 (63.6%) of these 33 species have been recorded both in the Magadan oblast and in the Chukchi autonomous republic. These are the most mobile and eurytopic species of the fauna.

The material provides an opportunity for comparison with a recent treatment of the Beringian Noctuidae fauna (KONONENKO *et al.* 1990). The proportion of Holarctic species in the Noctuidae of the Magadan-Chukotka area is 55/109 (50.9%), while it is 26/68 (38.2%) in the

Tortricidae of the same area. The difference is probably largely real and due to the weaker mobility of Tortricidae. However, future research is expected to reveal more Holarctic connections and the difference may decrease. A habitat-based comparison of distributions of different zoogeographic groups should wait for the accumulation of more material.

The main tortricid host plants common to northern Europe and north-eastern Siberia are *Salix*, *Populus tremula*, *Betula*, *Vaccinium* and *Ledum*. *Pinus* and *Picea* of Europe are substituted by *Larix gmelinii* in north-eastern Siberia, and *Artemisia* is also typical for that area.

A group of boreomontane or actoalpine species is widely distributed in the arctic and subarctic areas and also occur in the southern Siberian mountains or Mongolia : e.g. *Apotomis lemniscatana* (KENN.). Some species also occur in the Alps : e.g. *Epiblema simplonianum* (DUP.) and *Grapholita aureolana* (TGSTR.).

The group of Holarctic-boreal and transpalaeartic-boreal species is rather poor. These species live mainly in more or less xerothermic habitats : e.g. *Eucosma messingiana* (F.V.R.). Some of them are widely distributed in Europe, but occur only locally in north-eastern Siberia : e.g. *Notocelia tetragonana* (СТРН.). Characteristic host plants of boreal species in Europe and in NE Asia are *Rosa* [e.g. *Notocelia cynosbatella* (L.) and *N. incarnatana* (HB.)] and some herbaceous plants of forest edges or steppe slopes ((e.g. *Clepsia rurinana* (L.), *Eana argentana* (CL.), *Cydia oxytropidis* (MART.)). Few of these species are found in the Chukchi autonomic republic.

Some species are eastern Palaeartic and occur in Siberia eastward to the Pacific, some of them to Japan : *Clepsia aerosana* (LD.); *Rudisociaria expeditana* (SNELL.), *Asketria kentiana* (STGR.), *Eucosma ommatoptera* FLKV., *Dichrorampha ambrosiana* (KENN.).

Seven species are endemic for the western Beringian area, being known only from north-eastern Siberia : *Olethreutes kamtshadalus* (FLKV.), *O. exaridanus* KUZN. sp.n., *O. kononenkoi* KUZN. sp.n. and some others. They may be replaced by vicariants in North America or some of them may yet be discovered in eastern Beringia. The occurrence of a vicariant species in N America has already been shown for *O. kamtshadalus* (FLKV.) [*O. bowmananus* (MCD.)].

A small group is composed of species which are distributed in the North American continent and also occur in eastern Asia, some of them westward to the Ural Mountains : *Aphelia septentrionalis* (OBR.),

*Clepsis danilevskyi* KOSTJUK, *Olethreutes inquietanus* (WLK.), *O. glacianus* (MÖSCHL.) and *Gypsonoma parryana* (CURT.).

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